(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 21 July 2005 (21.07.2005)

PCT

(10) International Publication Number $WO\ 2005/066377\ A1$

(51) International Patent Classification⁷:

C21D 9/06

(21) International Application Number:

PCT/JP2005/000427

- (22) International Filing Date: 7 January 2005 (07.01.2005)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2004-004358

9 January 2004 (09.01.2004) JP

- (71) Applicant (for all designated States except US): NIPPON STEEL CORPORATION [JP/JP]; 6-3, Otemati 2-chome, Chiyoda-ku, Tokyo 100-8071 (JP).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): ONODERA, Noriaki [JP/JP]; c/o Nippon Steel Corporation Yawata Works, 1-1, Tobihata-cho, Tobata-ku, Kitakyushu-shi, Fukuoka 804-0001 (JP). SATOH, Takuya [JP/JP]; c/o Nippon Steel Corporation Yawata Works, 1-1, Tobihata-cho, Tobata-ku, Kitakyushu-shi, Fukuoka 804-0001 (JP). UEDA, Masaharu [JP/JP]; c/o Nippon Steel Corporation Yawata Works, 1-1, Tobihata-cho, Tobata-ku, Kitakyushu-shi, Fukuoka 804-0001 (JP). FUJITA, Kazuo [JP/JP]; c/o Nippon Steel Corporation Yawata Works, 1-1, Tobihata-cho, Tobata-ku, Kitakyushu-shi, Fukuoka 804-0001 (JP). KOBAYASHI, Akira [JP/JP]; c/o Nippon Steel Corporation Yawata Works, 1-1, Tobihata-cho, Tobata-ku, Kitakyushu-shi, Fukuoka 804-0001 (JP).

- (74) Agents: SHIGA, Masatake et al.; 2-3-1 Yaesu, Chuo-ku, Tokyo 104-8453 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RAIL MANUFACTURING METHOD

(57) Abstract: A rail manufacturing method is provided, in which a billet is hot-rolled into a rail form and the rail is cooled to ambient temperature. The foot part of the rail can be mechanically restrained to improve the straightness of the rail during at least the period of cooling where the surface temperature is between 800 °C and 400 °C. In the subsequent cooling process, at least while the surface temperature of the foot of the rail is between 400 °C and 250 °C, the rail is kept in an upright state, and cooled naturally without using insulation or accelerated cooling.

